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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Examiner: Stephen J. Castellano

Group Art Unit: 3781

In re Application of:
RONALD CAUDILL ET AL.

Serial No. 10/692,116

Filed: October 23, 2003

ALUMINUM CYLINDER WITH A
PLASTIC COATING

Attorney Docket No. 282660-00247

APPELLANTS' REPLY BRIEF

January 12, 2007

Commissioner for Patents
MAIL STOP APPEAL BRIEF - PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is a Reply Brief to the Examiner's Answer's dated November 16, 2006 and in support of the Applicants' Appeal from the decision of the Examiner dated August 17, 2006 finally rejecting claims 1-16. The claims, as amended, are set forth in Appendix A to Appellants' Appeal Brief.

Status of the Claims

Claims 1, 2, 6-9 and 14-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Haldenby* (U.S. Patent No. 5,474,846) in view of *Seal et al* (U.S. Patent No. 5,822,838).

Claims 3-5 and 10-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Haldenby* ('846) in view of *Seal* ('838) as applied to claims 2 and 9 and further in view of *Luttmann et al.* (U.S. Patent No. 6,244,020).

Argument

Initially, the Examiner repeats the rejections set forth in the final Office Action. The Appellants have responded to these rejections in the Appeal Brief. On page 5 of the Answer, the Examiner presents the Response to Argument to which Appellants hereinafter reply.

Prior to addressing the Examiner's arguments, it is again briefly noted that *Haldenby* discloses a steel cylinder with a plastic lining and *Seal* discloses a tank with a composite overwrap and a thin liner made from a metal having a high modulus of elasticity and high ductility. Initially, *Haldenby* notes that the invention relates to "steel cylinders," that many reactive gasses may attack the metal of the cylinder, and as such, a plastic coating is advantageous. Col. 1, lines 6-25. Because the focus of the *Haldenby* disclosure is on the application of the plastic lining to the steel tank, information on the steel tank is limited. For example, the tank is merely described as a "standard steel industrial cylinder," Col. 2, lines 36-37, but does not disclose the dimensions of the tank.¹ *Seal*, on the other hand, fails to disclose that aluminum or titanium/aluminum alloy liners are subject to a similar "attack" from reactive gases. Instead, *Seal* discloses a vessel wherein the metal portion of the assembly is a "liner" having a composite overwrap. Such a liner "has a ratio of thickness in inches over diameter in inches of about 1.7×10^{-3} . Preferably, the liner ... has a thickness of not more than 0.050", more preferably, not more than 0.040", and most preferably not more than 0.025"" Col. 2, lines 56-60. It is further noted that the "aluminum liner" (Col. 3, line 37 and Figure 1B) of *Seal* is prior art and the bulk of the *Seal* disclosure relates to a liner made from a titanium/aluminum alloy.

In response to the Appellants' argument that the Examiner has failed to present a *prima facie* case of obviousness as to why *Haldenby* and *Seal* should be combined, the Examiner asserts that *Seal* "provides two modifications of *Haldenby*, (1) to add the overwrap and (2) to modify the metal to be aluminum." The Examiner

¹ Appellants further note that *Haldenby* never states that the tank is structured to contain a "high pressure" gas as recited in the present application. In fact, *Haldenby* only discloses that the tank is exposed to a pressure of less than one atmosphere during testing.

further asserts that, “[t]he motivation to add overwrap is expressed as ‘to reinforce the shell and make it capable of withstanding higher internal pressures.’” Answer at 5.

Appellants note that, the initial burden to present a *prima facie* case of obviousness is on the Examiner. That is, the Examiner must provide some suggestion of the desirability of doing what the inventor has done. “To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention *or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.*” *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985) (emphasis added). Further, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

With regard to the first point raised by the Examiner, *i.e.* “to add the overwrap,” the Examiner has identified one reference that discloses a steel tank with a plastic lining and a second reference that discloses a composite vessel with an aluminum lining and stated that the references can be combined to “reinforce the shell and make it capable of withstanding higher internal pressures.” Appellants contend that the Examiner has not presented a “*convincing line of reasoning as to why the artisan*” would conclude that a “standard steel tank,” such as the tank in *Haldenby*, would need to be reinforced with an overwrap in a manner similar to a “liner” having a preferred thickness of not more than 0.025 inch, as in *Seal*. That is, given that a “standard steel tank” is much stronger than an aluminum liner not more than 0.025 inch thick, the Examiner has not provided an adequate motivation for combining the references as stated. As such, the Examiner has failed to meet the burden to present a *prima facie* case of obviousness as to why *Haldenby* and *Seal* should be combined to reinforce a steel tank with a composite overwrap.

With regard to the second point raised by the Examiner, *i.e.* “to modify the metal to be aluminum,” the Examiner notes that *Seal* discloses that aluminum is the

preferred metal, due to a high strength to weight ratio, in aerospace and rocket applications. *Haldenby*, however, fails to disclose the use of the plastic lined steel cylinders in “aerospace and rocket applications.” *Haldenby* instead discloses that plastic lined steel cylinders are used to store hazardous chemicals for industries such as computer chip manufacturing. Col. 1, line 19. The Examiner has failed to indicate why those skilled in the art of designing high pressure steel cylinders for storing hazardous chemicals in steel cylinders and used in manufacturing would find it obvious to switch to an aluminum shell upon reading the *Seal* reference. That is, the Examiner has failed to state why *Seal*’s single mention of a prior art overwrapped aluminum liner used in aerospace and rocket applications would suggest to one skilled in the art that such a vessel could also be used to store hazardous chemicals for industries such as computer chip manufacturing. Moreover, the plastic lining disclosed in *Haldenby* is needed because the stored chemicals are known to react with steel. *Seal* fails to disclose that such a similar reaction occurs with the liner made from aluminum or a titanium/aluminum alloy. As such, the Examiner has failed to meet the burden to present a *prima facie* case of obviousness as to why *Haldenby* and *Seal* should be combined to change the material of a tank from steel to aluminum or why it would be obvious to provide an additional plastic lining for a vessel having an aluminum lining.

The Examiner further states, Answer at 6, that the Appellants have stated that the standard for combining references under 35 U.S.C. § 103(a) is that “each of the references explicitly discuss the other.” The Examiner, however, has exaggerated the Appellants position to the point of ridiculousness. Rather than addressing the flaws in the Examiner’s hyperbole, Appellants will simply restate the law as set forth by the United States Court of Appeal for the Federal Circuit. That is, as stated in, *In re Geiger*, 815 F.2d 686, 2 USPQ2d 1276 (Fed. Cir. 1987), “obviousness cannot be established by combining teachings of the prior art to produce the claimed invention, *absent some teaching, suggestion, or incentive supporting combination*” (emphasis added). Similarly, the court in, *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed.

Cir. 1991), stated that “both the suggestion [to make the claimed apparatus] and the reasonable expectation of success must be found in the prior art, not in the Applicants’ disclosure.”

The Examiner concludes, Answer at 6, with another attempt to show the alleged motivation to combine the references, but does so by broadening the scope of the two cited references. That is, the Examiner makes the following two statements; (1) “*Haldenby* teaches the advantages of internal coatings to protect the interior of a *metal cylinder*,” and (2) “*Seal* teaches the advantages of a composite overwrap to reinforce in increase (sic) the strength of a *metal cylinder*” (emphasis added). Such a generalization of the references may be appropriate if the vessels disclosed therein were used in a similar environment or had other similarities. However, where the vessels disclosed in each reference are used in different environments and the construction of the tanks is different, as identified above, Appellants believe that a more accurate summary of the references is that (1) “*Haldenby* teaches the advantages of internal coatings to protect the interior of a **standard steel** cylinder,” and (2) “*Seal* teaches the advantages of a composite overwrap to reinforce the strength of a **vessel having a composite overwrap and an aluminum liner**.” Given this more appropriate summary of the references, it is clear that there one skilled in the art would not be motivated to combine the references as suggested by the Examiner.

Accordingly, the rejection of Claims 1, 2, 6-9 and 14-16 under 35 U.S.C. § 103(a) as being unpatentable over *Haldenby* in view of *Seal* is improper and the Examiner’s rejection should be reversed.

Turning to the rejection of Claims 3-5 and 10-13 under 35 U.S.C. § 103(a) as being unpatentable over *Haldenby* (‘846) in view of *Seal* (‘838) as applied to Claims 2 and 9 and further in view of *Luttmann et al.* (U.S. Patent No. 6,244,020), it is again briefly noted that *Luttmann* discloses a process for producing a filled, sealed, and sterilized container that may be opened “without the aid of tools.” Col. 1, lines 17-19. The container has a “weakening” at the “lid” wherein the container is structured

to rupture upon the application of force. Such a container would, presumably, be used for food or medicines. Based on the foregoing, Appellants again assert that the *Luttmann* container is not a high pressure device and *Luttmann* is non-analogous art.

In response to this argument the Examiner, citing *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992) initially notes that a, “reference must either be in the field of applicant’s endeavor or, if not, then be *reasonably pertinent to the particular problem with which the inventor was concerned.*” Answer at 6 (emphasis added). The Examiner then contends that the *Luttmann* container is “a sealed can which must withstand internal pressures and is *somewhat applicable and related* to the field of endeavor since *Luttmann* is intended for internal pressure situations.” Answer at 6 (emphasis added). Thus, as an initial observation, the Appellants note that the Examiner does not apply the standard set forth in the cited law. That is, *Oetiker* states that a reference must be “in the field of applicant’s endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.” The Examiner, however, states that *Luttmann* is merely “*somewhat applicable and related* to the [Appellants’] field of endeavor....” As such, the Examiner has, essentially, admitted that *Luttmann* is non-analogous art.

Then, the Examiner again dabbles in exaggeration stating that, “*Luttmann* discloses the solution of a particular problem involving the sealing or preservation of a seal of a closed can during a *high* temperature sterilization operation in which the *high* internal pressure within the can must be withstood.” Answer at page 6-7 (emphasis added). *Luttmann*, however, merely states that during sterilization, the temperatures are “elevated” and that there is an internal pressure. Col. 1, lines 29-50. *Luttmann* does not disclose how elevated the temperature is, and does not state that the temperature is “high.” More importantly, nowhere does *Luttmann* state that the pressure within the container is “high” and there is no indication that, even at a pressure elevated by a temperature sterilization procedure, the pressure within the food storage can reaches 500-10,000 psi, as recited in the present application. In fact, *Luttmann* fails to mention any specific pressure at all. As such, the Examiner’s

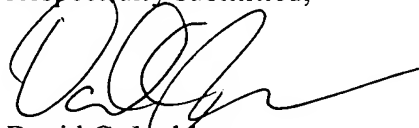
contention that the *Luttmann* can is a high pressure container that one skilled in the art would combine with the steel cylinder of *Haldenby* or the aerospace/rocketry composite vessel of *Seal* is not supported by the facts.

Accordingly, the rejection of Claims 3-5 and 10-13 under 35 U.S.C. § 103(a) as being unpatentable over *Haldenby* in view of *Seal* and *Luttmann* is improper and the Examiner's rejection should be reversed.

Conclusion

It is submitted that Claims 1-16 are patentable over the prior art. Therefore, it is requested that the Board reverse the Examiner's rejections of Claims 1-16 and remand the application to the Examiner for the issuance of a Notice of Allowance.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'D. C. Jenkins', with a long horizontal flourish extending to the right.

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